CRS ADSTAR REQUIREMENTS

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CRS ADSTAR REQUIREMENTS

SECTION I

INTRODUCTION

1.1 This paper defines the requirements for an Automated Document Storage and Retrieval (ADSTAR) System to succeed the present CRS/DSR (Document Storage and Retrieval) System and to support a SAFE system. While the narrative addresses only the SAFE/ADSTAR requirements, the tabular presentations (see Summary Tables) present the requirements for an ADSTAR system with and without SAFE. The ADSTAR requirements are based on data extracted from Volumes II (September 8, 1973) and III (August 8, 1975) of the third edition of SAFE Requirements Paper, the SAS paper entitled "Holistics View of SAFE," and from management data available about the present CRS/DSR system.

1.2 ADSTAR JUSTIFICATION

1.2.1 Intelligence production is a dynamic process, the need for more timely intelligence products is increasing and has resulted in changes in the way information is collected, transmitted, disseminated, and analyzed. Consequently, the level of expectation of intelligence analysts and their customers

for both raw and finished intelligence has been raised through the use of advanced technology in virtually all areas. This pressure is the principal reason for acquiring an ADSTAR system for the Agency's central document storage and retrieval (DSR) facility. The production offices, in fact, are themselves undergoing some rather dramatic changes and innovations in the methodology of the analytical process--everything from computer modeling to the application of Bayesian theorems. In brief, the present manual DSR system is no longer capable of meeting the response time, delivery, and display requirements of its users.

1.2.2 More specifically, the system is "output bound," i.e., it takes too long to get what you need from the system compared to the time it takes to search computerized index records and get a document reference. The gap worsens with demands for on-line, near real-time support to Agency components and others.

1.2.3 Another deficiency of the present system is its heavy use of manpower. This is compounded by the continuing inability to keep the operation fully manned, and pressures to reduce the size of the present staff. If we add the fact that we expect a SAFE-supporting central ADSTAR system to process

several times more documents in and out of the system than is presently being done, it becomes readily apparent that we must take advantage of improved technology to accomplish this.

1.2.4 Finally, a new ADSTAR system is needed to save space. If the present system continues to grow even at its present limited pace, it will require far too much space per image stored. If, as a result of SAFE, we are required to increase annual storage capacity for several times the number of documents we now input to the system the problem becomes even more critical. In the SAFE context and to a more limited extent with an efficient ADSTAR system with remote display, the space saving must be thought of as not just occurring in CRS' Document Services Branch, but possibly Agency-wide. An effective ADSTAR system, with near instantaneous response, should reduce significantly the need for an analyst in a production office to build and maintain his own files.

1.3 DATA RELIABILITY

1.3.1 A word needs to be said about the reliability of the data used. Management data about the present DSR operation is available and reasonably accurate, and therefore the statistical factors used to derive specifications for an ADSTAR system

without SAFE can be viewed with a high degree of confidence. In fact, the only changes made to current system load factors, i.e., Phase I, ADSTAR, were to allow for an increase in receipts to accommodate new document sources, and to allow the entire new system to accommodate a greater input and output by raising the average document length from 7.5 pages to 10 pages.

1.3.2 In assessing the available data needed to arrive at requirements for an ADSTAR system in a SAFE environment, however, the situation is considerably less reliable. The most reliable data available to calculate the SAFE-ADSTAR System requirements relates to input. SAFE expects to handle several categories of documents not presently processed into the DSR system. These consist primarily of items selected for input to the microstore from open literature sources, estimated to number approximately 1,000 items per day (10,000 pages), as well as a more complete selection for the microstore of electrical receipts from official channels, i.e., State, DIA, NSA, and

STAT [redacted] While the estimate of open source material (approximately 260,000 items per year) to be input to the SAFE-ADSTAR system is difficult to assess in terms of reliability, our prediction of the likely volume of total input to the system seems reasonably reliable.

1.3.3 It is somewhat more difficult to look at the output side of the SAFE-ADSTAR requirement and speak with a similar degree of confidence. Analyst accesses to the system in the SAFE paper, only provided for a "maximum system load," i.e., peak load; but no average or sustained load is given. Nor is there any indication of a total annual system load in terms of documents, or more importantly, pages per year retrieved, viewed, printed, etc. The estimated load requirement presented in this paper requires careful examination before the figures are accepted for system design purposes.

1.3.4 The SAFE-ADSTAR requirements contained in this paper emphasize the hard copy document world. Electrically received messages are included in the ADSTAR system as an integral part of that system. They are to be stored in microform in ADSTAR as a successor to the present DSR system and also to serve as a document storage back-up to the SAFE system.

1.3.5 The ADSTAR requirements are stated to reflect the varying workload factors that will exist for the initial system, Phase I and Phase II, and the ultimate SAFE-supporting system. Phase I will begin in FY 1978 and Phase II in FY 1979.

SECTION II

SUMMARY STATISTICS OF PRESENT CRS DSR SYSTEM*

2.1 The CRS DSR system houses about 10 million documents or an estimated 80 million pages in various formats. It receives about 750 thousand documents each year; 400 thousand of these are added to the microfiles annually. Approximately 50 percent of the annual document receipts are in electrical form; 30 percent of these are added to the microfiles via COM. The remainder consists of filmed documents and paper documents which are converted to microfilm. About 12 percent of all receipts are stored in their original paper format.

2.2 Hard copy documents reach the microfilm files within four to six days after receipt in the Agency. Documents converted to microfilm via COM reach the files within two to two and one-half days. Electrical receipts are available from the digital

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*For a full description of the present system see The CRS Document Storage and Retrieval System, dated 15 March 1976.

files within a half an hour and up to twenty-four hours after receipt.

2.3 The present system retrieves between 125,000 and 150,000 documents per year, and blows back to paper about 1,050,000 pages per year for requesters located primarily in the Headquarters Building. While there is a trend toward more use of microfilm as the final output medium, most system users still prefer to receive paper copies of documents. About 30 percent of all images retrieved are provided to requesters using microfilm and viewed on a screen.

2.4 On the average, the present system provides a response to a request in about five days; however, the time frame for responses ranges from minutes to many weeks. Requests are received by mail, telephone, or "walk-in" to the DSB reading rooms.

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SECTION III

ASSUMPTIONS

3.1 In the process of developing the general CRS ADSTAR systems requirements, a number of assumptions were made. They are as follows:

3.1.1 The production of intelligence will require speedier input, access, retrieval, display, and delivery of documents/information than is possible with today's system.

3.1.2 Additional personnel resources are not available to improve the present DSR system's input and output processing times.

3.1.3 Rapid, on-line, access to hard copy documents will be limited to the data covering the most recent five years, except for branch/private files which will be retained as per user's instructions. Based on past experience, it is assumed that the document file beyond the most recent five years will continue to be less active and a slight delay of no more than six hours in the worst case is acceptable (see 3.1.4).

3.1.4 Access to documents five to ten years old is acceptable at retrieval rates within hours, and for all documents older than ten years at times provided by the present system.

3.1.5 Only a limited amount of the present document file will be converted and input to any successor system. Conversion costs, document use statistics, and other factors will be considered before a final recommendation is made.

3.1.6 The ADSTAR system is being developed to support both SAFE system users and document requesters who are not SAFE participants.

3.1.7 Document categories currently stored in CRS will also be stored in ADSTAR. This includes RSM-stored electricals, i.e., NSA, State, DoD electricals.

3.1.8 The ADSTAR system will not require basic R&D but should be available for the most part from off-the-shelf systems. System modification will probably be required.

3.1.9 ADSTAR is designed primarily for Headquarters users; however, it must be able to serve document requesters for query input and document display, from and in remote locations, i.e.,

STAT [ ] OGCR, IAS, NPIC. Secure communications links to these organizations from Headquarters must be provided.

3.1.10 The system must satisfy archival document storage requirements.

3.1.11 ADSTAR will be the SAFE document back-up system.

3.1.12 During the upcoming years, we can expect an increase in the percentage of documents received in electrical form.

3.1.13 The ADSTAR system should have a life span of about ten years.

3.1.14 The ADSTAR system must optimize energy and resource conservation characteristics.

3.1.15 The cost of acquiring and installing an ADSTAR system without SAFE will not exceed two and one-half million dollars in FY 77 and 78.

3.1.16 To the extent that a SAFE-supporting ADSTAR system will require funding beyond the FY77 $1,500,000 and FY78 $1,000,000, Project SAFE or other funds must be made available.

3.1.17 Because of its size and transaction rate ADSTAR must be completely modular in both storage capacity and output capability to permit gradual growth to a full-sized system.

3.1.18 Because ADSTAR will be operational prior to SAFE, the SANS number will not initially be employed. SAFE forsees no index conversion, but if such should occur, SAFE will have to supply a document number to the SANS conversion facility. The SAFE system will assign a SANS document number.

3.1.19 ADSTAR will be operational approximately two years prior to SAFE.

SECTION IV

FUNCTIONAL REQUIREMENTS

4.1 Input Function

4.1.1 Input Quantity

4.1.1.1 The CRS ADSTAR system must be able to process 1,100,000 documents into the microstore annually (d/y). Because the SAFE system will have a larger ratio of short documents (electricals) in it than ADSTAR without SAFE, the average number of pages per document would be considerably lower than in an ADSTAR system without SAFE. With an average length per document of five pages and a 10 percent growth factor for receipts from new sources, the total number of pages to be accommodated by the system per year (p/y) would amount to 5,500,000 p/y. During the early phases of ADSTAR the system must also accept for temporary storage in digital form about 433,000 electricals annually that will not have been indexed.

These non-indexed electricals should be stored digitally for text search retrieval. This function may ultimately be assumed by SAFE.

4.1.2 Types of Documents

4.1.2.1 The initial phases of ADSTAR will encounter an input workload similar to the present DSR system.

4.1.2.2 About 50 percent of all documents input to the SAFE-ADSTAR microfile will come from electrical sources and will be available from digital files. The other 50 percent are received in hard copy and initially will be available only from the microfile. All indexed documents, i.e., documents indexed for the public file either centrally by CRS or those selected and indexed by individual analysts, will be stored in the microfiles, whether received in electrical or hard copy form. The average number of pages per electrical has been calculated at two pages per document as compared to about eight pages per hard copy document. Thus, the electrical path must process about 1,100,000 pages into the microfiles and the hard copy path must process about 4,400,000 pages into the microfiles. The 1,100,000 documents per year input to the microfiles includes all documents input to the present non-digital DSR system, plus 260,000 miscellaneous non-NFIB intelligence items, and an additional 300,000 electricals,

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i.e., [redacted] State, DIA, and NSA field traffic. In addition to the microfile documents, ADSTAR requires storage space for about 830,000 pages of electrical receipts annually received in digital form. These documents include all those electricals not indexed or controlled by any SAFE or CRS index.

4.1.3 File Size

4.1.3.1 The ADSTAR system must be completely modular to permit file expansion. ADSTAR Phase I and Phase II should be able to accommodate on-line a file size of 2,000,000 documents or about 14,000,000 pages. This figure is based on the assumption that we would convert the last three years receipts (i.e., about 1,000,000 documents) to the ADSTAR system, and in addition, allow for two years of increased growth (1,000,000 documents). In the final ADSTAR phase the system must accommodate on-line 5,500,000 documents or 27,500,000 pages.

4.1.3.2 Besides sheer volume, conversion presents a number of other potential problems that must be considered before determining the degree of certainty with which any portion of the current collection may be converted to a new ADSTAR storage medium. The new system must accommodate conversion from a variety of formats including the CRS/DSR 35mm 8-up aperture card as well

as NMA and COSATI standard microfiche and if possible 35mm non-standard reel film. Therefore, potential problems can be related to those of hardware, format, age and physical condition of the microforms, image quality, and film characteristics of the present and future storage medium. The existing imagery must be able to withstand the subsequent generations leading to the new file medium whether it is digital, conventional microfilm, or ultra-high reduction film technology. The physical condition and characteristics of the various CRS held media will affect the ability to automatically manipulate the materials or to obtain indexing information, i.e., punched data can be read from aperture cards and they may be machined, but this cannot be done with either microfiche or roll microfilm. Image quality and image orientation must also be considered, e.g., contrast ratio between line and background densities, reduction ratios, resolution, and condition and type size of original input material. Images should be right reading when the microforms are properly oriented.

4.1.3.3 Document conversion must be initiated prior to total system installation. About 50 percent or 500,000 of the documents to be converted should be ready for storage by Phase I of ADSTAR.

4.1.4 Input Rate

4.1.4.1 The system must be able to process 5,500,000 images annually into the microfile. The hourly input rate will be about 2,640 pages per hour $\frac{(5,500,000)}{2,080}$. Of these about 530 pages per hour will be processed automatically from electrical sources and 2,110 pages/hour from hard copy sources. Documents must be available in the microfiles within one day after initial receipt, e.g., those in by 1500 hours of one day must be available by 0700 the next day. Input speed should be optimized.

4.1.5 Document Control

4.1.5.1 The ADSTAR system must be able to assign document control and address numbers to all documents resident in the system by using the SAFE SANS numbering system or in the pre-SAFE phase some other computer supported numbering system to identify the document. At the least, ADSTAR must interface with this numbering system.

4.1.6 Hard Copy Receipts

4.1.6.1 The system must be able to process a wide variety of hard copy receipts into the microfiles. Document sizes will

include standard 8.5"x14" and 8"x10.5" sizes as well as odd-size newspaper clippings. Documents which exceed the limits of the input copy board will be sectionalized. Document quality will also cover a broad spectrum including varying print fonts (style and size), Xerox-like copies, half tones, press and journal articles, etc. The system must possess sufficient blow-back capability so that pictorial material will be able to meet simple recognition criteria. It must be able to accept and store colored charts, maps, and photos, but not blow-back such material in color, although such a capability would be desirable. In addition, the system must be able to handle materials several inches thick, e.g., a bound volume, and where the shade and quality of paper may vary greatly.

4.1.7 Electrical Receipts

4.1.7.1 The system must be able to receive and process electrical receipts into storage virtually automatically, i.e., with as little human intervention as possible. This process must be faster than that for hard copy documents. Processed electrical receipts must be available from the microfile within a few hours and no later than 16 hours after receipt by the system.

4.1.8 Quality Control

4.1.8.1 The system should be fail-safe against misfiles (i.e., storing a document in the wrong address) and duplicate control numbers.

4.1.8.2 The input must not degrade the image quality of a document as a result of its introduction into the system. Image enhancement should take place during the input process, e.g., controlling exposure variables to provide the most precise copy image. Such enhancements may be through optical, electronic, or any other means.

4.1.9 System Integration

4.1.9.1 Input processing must interface with communications and computer subsystems.

4.2 Storage and Maintenance

4.2.1 System maintenance must not significantly degrade system operation. Enough redundancy must be built into the system to permit the required maintenance activity to operate in parallel with system operations. Maintenance should not degrade

system operating effectiveness below the 85% level.

4.2.2 The system must have a power failure recovery procedure that guarantees data integrity.

4.2.3 The system should have, if possible, a method to correct or replace document images, e.g., downgrading the classification of documents.

4.2.4 The system should provide some type of purge capability. Purging must not interfere with I/O functions and must be limited to central processing.

4.2.5 The system should provide management information on its operations, i.e., number of inquiries, number of documents retrieved, number of images viewed and reproduced, etc.

4.3 File Organization

4.3.1 The system must permit documents to be filed and retrieved on a compartmented basis. Such criteria as the identification of documents as codeword, collateral or sensitive must be accommodated in segregrated files.

4.3.2 The system's size and cost must be controllable by keeping only active material (most recent five years receipts) on-line. Documents in "branch/private files" will be retained as long as the analyst requires. Since on-line storage will be limited to the most recent five years of receipts, the system should permit documents to be stored by date of receipt.

4.4 Output Function

4.4.1 Output Media

4.4.1.1 The ADSTAR output media must include paper, microfilm, and soft display, i.e., optical display and CRT displays. The utlimate phase of the system provides for the soft displays to be the major medium. However because of the phased installation of the ADSTAR system over approximately three years, i.e., FY 1978-80, the output requirements will vary in relation to the type of display and delivery system ADSTAR and subsequently SAFE will provide. Thus in its earliest phase the ADSTAR system will have to output 66 percent of all images retrieved in hard copy, i.e., paper, and 33 percent in soft display and a small remnant in microfilm. As the remote display capability improves in later installation phases the

system can expect a decline in the paper output load and an increase in display output. It is estimated that with a full complement of display stations, i.e., at least one terminal for every two users, the system would have to be able to display 75 to 95 percent of all images retrieved and blow back to hard copy 5 to 25 percent of the retrieved images. The system must be able to supply an archival medium copy of all officially designated archival documents.

4.4.2 Output Quality

4.4.2.1 The quality of the system output should be equal or better than that of the original material. An image enhancement capability should be provided.

4.4.3 Output Quantity and Rates

4.4.3.1 The ultimate SAFE-supporting ADSTAR system must retrieve an estimated 6,500,000 documents or 52,000,000 pages per year. This estimate is based on data derived from a SAS study entitled a "Holistic View of SAFE," dated 6 January 1976. This study involved 900 users surveyed over a period of one

month. Of the nine SAFE functions studied in this report, only five offer the probability for requests for documents from the ADSTAR system. They are Compose, Search, Public File, Search Information Files, Search Branch File, and Build. (Of these, the Compose and Build functions appear to generate a low level of retrospective document retrieval activity.) During the 11-hour period of study each day, there were a total of 2,371 uses of the three most used files mentioned above. If the number of accesses is doubled to represent 1,800 SAFE users, a total of 4,742 accesses per day results. Volume III of the SAFE Requirements Paper says that each access will result in an average retrieval of 10 documents, with an average of 8 pages per document. Half of these documents will be retrieved from the microstore, for a total of 189,680 pages per 11-hour day (4,742 x 40), or approximately 17,240 hard copy pages retrieved per hour.

4.4.3.2 Using the percentages of output quoted above, it is estimated that the various outputs from the microstore are distributed as follows:

	11-hour day	8-hour day
Non-SAFE Users	500 pages per hour	500
View Only	12,930 pages per hour	17,780
Print	860 pages per hour	1,185
Annotate *	3,450 pages per hour	4,742
Total continuous rate of retrieval	17,740 pages per hour	24,207

(Rounded upward to 25,000 pages retrieved per hour or 52,000,000 p/y)

4.4.3.3 The ADSTAR system will be operational one to three years before the first phase of SAFE becomes operational. During this time lag ADSTAR will function more or less as a replacement of the current DSR system. During phase 1 of ADSTAR the system output work load will be approximately 200,000 documents or 2,000,000 images/pages p/y. This allows for a 25 percent increase over present operations. From phase 1, the system must evolve subsequently to support a SAFE system work load.

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*In the absence of an adequate on-line annotation capability within the SAFE system for source documents this may also represent a paper blow-back work load.

4.4.4 Hard Copy Quantity

4.4.4.1 The initial ADSTAR system must be able to blow-back to paper 66 percent of all retrieved images/pages, i.e., $\frac{2,000,000}{66}$ =1,320,000 p/y or 650 p/h (p/y=per year; p/h=per hour).

4.4.4.2 SAFE calls for the blow-back to paper of 5 percent of all retrieved images--i.e., 2,600,000 p/y at an hourly rate of 1,250 p/h. The 20 percent of retrieved images that require annotation will probably also require paper copy. This would result in a requirement to blow-back to paper 10,400,000 p/y or 5,000 p/h. The system must permit an increased estimate of 20 percent to accommodate peak demands, or 6,000 hard copy pages/hour.

4.4.5 Soft Display

4.4.5.1 Upon installation and operational start-up of the ADSTAR system, the capability must exist to allow all information, e.g., reference citations, and/or images to be viewed centrally. This is required for file verification and maintenance, and for customer viewing of requested document references and resultant images. Initially, the system capacity for soft

copy viewing will be 33 percent of the total images retrieved (2,000,000 pages). This means that 660,000 p/y or 320 p/h will be viewed in the central facility. If the ultimate system design requires that a separate terminal be used for the remote transmission and viewing of document images, then this terminal should be installed into each central work station during the Phase 1 ADSTAR operation.

4.4.5.2 In the ultimate SAFE supporting ADSTAR system all images should be able to pass a viewing station. The requirement for soft display equates to the total output of the system, i.e., 25,000 p/h sustained or 30,000 p/h peak load. Of these, 75 percent or 18,750 p/h (peak 22,500 p/h) will not be processed any further, i.e., 75 percent will be viewed only, and 25 percent or 6,250 p/h (7,500 p/h peak) will be blown back to paper.

4.4.5.3 The system should be able to support about 50 remote display terminals by the end of Phase II. The final ADSTAR system should have a capacity for up to 2,000 terminals.

4.4.6 Display/Reproduction Rate

4.4.6.1 The first image of a search should be displayed within 30 seconds with subsequent images displayed within a fraction of

a second. For documents exceeding the buffer capacity, an additional 30 seconds delay would be encountered. Paper blow-back speed must be 2.5 seconds/page or less. Paging of documents in the reproduction process should be continuous and not require human interference, e.g., a seven-page document should require only one command to print all seven pages with a maximum time delay of 17.5 seconds. The reproduction process must not delay viewing any longer than required for the image exposure. Exposure time should facilitate the total blow-back cycle of 2.5 seconds.

4.4.7 Request Rate

4.4.7.1 Initially, the ADSTAR system will be required to respond to 30,000 requests p/y or about 15 requests p/h. During peak load situations the system must handle 36,000 requests p/y or about 20 request p/h.

4.4.7.2 Based on the SAS report a "Holistic View of SAFE," the ultimate SAFE supporting ADSTAR system must be able to process a request rate of about 1,250,000 requests per year. This number of requests requires a system that can process an average of 600 requests per hour with a peak of about 720 requests per hour. These figures include requests levied by non-SAFE users.

4.4.8 Mode

4.4.8.1 The system should be on-line. If not operated on a 24-hour basis, it must permit rapid (less than 30 minutes) start-up.

4.4.8.2 The system should permit multiple remote query input.

4.4.8.3 The system must permit interface with an automated image transmission/delivery subsystem.

4.4.8.4 Batch processing of document requests should be possible.

4.4.9 Paging and Browsing

4.4.9.1 The system must permit browsing through the file document by document and page by page. It must permit paging within a fraction of a second. The system should permit jumping forward or backward from and to pages and/or documents.

4.4.10 Miscellaneous

4.4.10.1 The system should provide some level of tutorial support, e.g., notifying a user that he is using invalid document numbers, a wrong procedure, etc.

4.4.10.2 A keyboard must be available for system access to the microstore and for computer support.

4.4.10.3 The system must interface with the communications, computer, and remote image display/delivery subsystems.

4.5 System Reliability

4.5.1 The system must have a very high degree of reliability. The system hardware, software and power supply must have enough redundancy to assure a high percentage of availability. The system should be available for use 99 percent of each workday, 365 days per year. By "available" we mean that the system must be able to perform all of the functions for which it was intended in support of the storage and retrieval of specific documents at required rates, formats, and operating modes.

4.6 Security Requirements

4.6.1 General

4.6.1.1 The security features incorporated into ADSTAR should provide protection against the following threats:

User or system error

Unauthorized user infiltration; e.g., browsing through files, masquerading as a legitimate user by unauthorized personnel, unauthorized physical acquisition of computer records (cards, tapes, printout, micrographic storage media), and exploitation of the system through "holes" in the operating system

Monitoring system transactions by tapping unencrypted communications lines or pick up of emanations

Misrouting of output data to the wrong addressee (spillage).

4.6.2 Physical security requirements will be dictated by the requirements of the information stored and/or processed.

4.6.3 Hardware/Software

4.6.3.1 Hardware/software protect features will be incorporated in the system to provide maximum data and system integrity.

4.6.3.2 The system should protect data, programs, etc., and prevent unauthorized access and guarantee that authorized access is

reliably accomplished.

4.6.3.3 Security processes should not significantly degrade system performance and should not require continuous human monitoring. Security procedures should not present a serious complication to system access.

4.6.3.4 Users should be able to add their own processes onto, but not subtract from or alter system security processes.

4.6.3.5 Each remote terminal unit will have a unique identifier which is identifiable by the operating system.

4.6.3.6 The system will have the capacity for detection of any change of status of the hardware configuration.

4.6.3.7 The operating system will have a method for determining the operating state of the software (i.e., whether operating system or other program). In a multi-programming environment, the operating system will distinguish each of the programs in execution.

4.6.3.8 The system will have a mechanism to clear memory and auxiliary storage.

4.6.3.9 The hardware will have fetch, store, and I/O protection features.

4.6.3.10 The operating system will be protected from other program execution. Privileged mode execution of the operating system should be as minimal as possible.

4.6.3.11 System security software will be a part of the operating system and will be as modular as possible. This software will contain a security audit trail capability.

4.6.3.12 The system will have the capability to carry security labels for the data internally and print these labels on output. This applies to CRT as well as printed output, i.e., the system will verify the classification of a given document in the index record and if other than the original classification a "new classification" will be overprinted on the document.

4.6.4 Communications Links

4.6.4.1 Communications links must maintain the security of the data from the central ADSTAR processor to remote devices.

4.6.4.2 Lines internal to a building will be incorporated in a data distribution system which meets security requirements for the transmission of TOP SECRET data.

4.6.4.3 Lines connecting outside building remote devices to the central ADSTAR facility and the main computer center will be encrypted in accordance with Office of Communications requirements.

4.6.5 Emanations

4.6.5.1 All equipment designated for use outside the Headquarters Building will be TEMPEST tested and modified as appropriate.

4.6.5.2 Equipment will be placed in working areas so as to provde a maximum necessary separation distance between classified and non-classified devices.

SECTION V

SUMMARY TABLES

Next 4 Page(s) In Document Exempt

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ADSTAR MANAGEMENT PLAN

Preface

The Automated Document Storage and Retrieval (ADSTAR) system is a system, yet to be defined, which will replace the Central Reference Service's manual document storage and retrieval system. This document addresses the managerial approach for the development of an ADSTAR system required for effective responsiveness to document retrieval requests and support to the Agency's analytical offices.

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SECTION I

INTRODUCTION

1.1 PURPOSE AND SCOPE

This document describes the management plan and direction for the development of an ADSTAR System.

1.2 OBJECTIVE

The objective is to develop a system which: a) is more responsive to near realtime support requirements, b) reduces human costs associated with the on-going, labor intensive system, and c) saves filing space in CRS and throughout the Agency's analytical offices. Because of weaknesses in the extant manual document storage and retrieval system, increasing service demands, and growing user dissatisfaction, the ADSTAR system should be provided in the immediate future, i.e., FY-1978-79 time period.

SECTION II

BACKGROUND

The Agency's central Document Storage and Retrieval (DSR) system is unable to keep pace with, and be responsive to, new requirements from the Agency's analytical offices in terms of increased service demands, faster response times, and capabilities for remote document viewing. In addition, Research and Collection offices are themselves undergoing some rather dramatic changes and innovations in the methodology of the analytical process and forthcoming improvement in real-time collection systems, respectively. Taken as a whole, these developments spell trouble for the manual/microform DSR system. More specifically, the present DSR system is "output bound", that is, it takes too long to obtain products from the system compared to the time it takes to search computerized document index records and notify the analyst the document exists. The present situation will worsen when faced with demands for on-line, near real-time support to the research analyst, target programmers, photo-interpreters, and others.

The ADSTAR System, therefore, must satisfy new DSR system requirements as well as the document storage, retrieval, and remote image viewing requirements of the SAFE Project.

SECTION III

MANAGEMENT APPROACH

The ADSTAR System development will be carried out as an Agency task. That is, an in-house group (ADSTAR Task Force) will be responsible for the definition, conceptualization, specification, administration of development, evaluation, and acceptance of the system. Recognizing the importance of concise specifications, contractor personnel possessing expertise in candidate technologies will supplement the Agency staff personnel already on-board and assigned to Central Reference Services (CRS) and Office of Joint Computer Support (OJCS).

The customer and contract administrator will be CRS. OJCS will provide computer expertise and specify present and future computer system interfaces as addenda to the ADSTAR functional and processing requirements.

The ADSTAR Task Force will be composed of DDI/CRS and DDA/OJCS personnel. Since the Document Services Branch (DSB) of CRS has primary responsibility for operation of the present Document Storage and Retrieval (DSR) system, and should be responsible for operation and maintenance of the ADSTAR system, the Task Force will be headed by a representative of DSB. Other Task Force participants will include representatives of the Microform Processing Branch/Support Services Division/CRS, the Systems Analysis Staff/CRS, and the System Design, Operational Development, and Test and Quality Assurance components of SAFE PMD/OJCS. ISAS/MPB will also be invited to assign a representative to the Task Force. CRS members of the Task Force will be attached to CRS' System Analysis Staff during the development of the ADSTAR system. Chief, SAS will provide (as needed) first-level management direction and guidance as well administrative and technical support, e.g., advice on negotiating contracts, assistance in developing requirements and specifications, and provision of clerical and editorial support in the preparation of papers and other documentation.

An ADSTAR Steering Committee made up of the Directors and Deputy Directors of CRS and OJCS, Chief, Document Services Group/CRS and Project Director, SAFE/OJCS will oversee the Task Force as a whole and provide managerial direction and controls when they are deemed necessary.

Because of the diversity of Agency microform interests and applications and the obvious advantages of selecting compatible (if not identical) hardware solutions to similar document storage and retrieval problems, close communications will be maintained with other Agency and Community components to avoid costly duplication of efforts, insure complete familiarity with alternative design plans and/or installed systems, and increase the utility and cost-effectiveness of the system chosen. The specific means for exchanging information and coordinating system plans and ideas will be as follows:

Internal

a. Formal meetings of representatives of the principal Agency micrographics systems (i.e., CRS/DDI and ISG/DDO) will be convened periodically under the auspices of the Comptroller. In addition, informal contacts between these two components will be maintained at least at the level experienced over the past 6-9 months. Every effort will be made--consistent with satisfying the design requirements peculiar to each application--to select the same ADSTAR system hardware for both components.

b. Participation will be continued in periodic meetings of the Agency's "Micrographics Users Group," chaired by C/MPB/ISAS, at which a far larger number of Agency components interested in micrographics is generally represented.

External

c. Attendance at meetings of the "Micrographics Working Group" (MWG) of USIB's Information Handling Committee (IHC). CRS represents the Agency at meetings of the MWG/IHC and, in concert with the CIA representative to the IHC, was instrumental in the establishment of this panel whose objective is to achieve Community agreement on microform standards, formats, image quality, storage media, hardware, etc. Any Community-imposed considerations or constraints which might impact on the CIA ADSTAR system design should emerge at sessions of this group.

SECTION IV

TASK DESCRIPTION

The task will be carried out through five distinct phases, as follows:

4.1 REQUIREMENTS DEFINITION PHASE

The task force will research and write the functional and processing requirements of the system which will require joint approval of the D/CRS and D/OJCS. All changes and addenda to the requirements document will require similar approval. A significant effort during this phase will be an industry survey and study whereby feasibility and optimization studies of candidate systems are performed to facilitate the Design and Analysis Phase (below). Monies will be made available for these studies during FY-76 and/or the Transitional Quarter. The requirements document will be used to solicit voluntary suggestions and ideas from interested organizations in industry.

4.2 SYSTEM DESIGN AND ANALYSIS PHASE

Using the requirements document supplemented by industry suggestions, the ADSTAR task force will develop a system description capable of meeting the requirements. From the system definition, an external reference specification (ERS) document will be developed outlining the external characteristics of the system, such as user interface facilities and examples of system output. The ERS will be used to solicit ideas and approaches for Request for Proposal (RFP) refinement and concision. During this phase, RFPs for the system will be developed and distributed, the logistic and communication requirements will be specified, and the coordination and interface requirements with existing and future systems related to ADSTAR will be firmly established.

The outline below shows the Management structure, responsibilities, and possible Agency organizational component representatives that will oversee: a) the writing of RFPs, b) evaluation of proposals, and c) awarding of contracts.

4.2.1 SOURCE SELECTION AUTHORITY

The Source Selection Authority will be composed of the Director of CRS advised by the Directors of OJCS and Office of Logistics (OL).

Directors, CRS and OJCS will be responsible for final Agency selection of winning bidder proposals based on technical assessment, price, and other factors.

Director, OL will be responsible for: a) final Agency contract negotiations upon receipt of obligation of funds authorization and b) contract award to the successful bidders.

4.2.2 SOURCE SELECTION BOARD

Will be composed of Chief, DSG/CRS (Chairman), Chief, SAS/CRS, PD/SAFE/OJCS, and a representative of Procurement Division/OL. This board will be responsible for: a) approval of RFPs submitted by the Source Evaluation Board and b) recommending winning bidder proposals to the Source Selection Authority. The recommendations will be based, in part, on a review of the proposal evaluation performed by the Source Evaluation Board (below).

4.2.3 SOURCE EVALUATION BOARD

Will be composed of the ADSTAR Task Force (Chief, DSB/CLD/DSG/CRS--Chairman), and a representative of Procurement Division/OL. This panel will be responsible for: a) review and refinement of RFPs, b) establishing evaluation criteria, c) evaluating proposals, d) ranking bidders based on technical and cost considerations, e) establishing bidders' list and f) presenting recommendations and rationales to the Source Selection Board.

4.2.4 RFP REVIEW PANEL

Will be composed of the Source Evaluation Board (Chief, DSB/CLD/DSG/CRS--Chairman) and representatives of Engineering Division/OC and Information Systems Security Group/OS. Draft RFPs will be prepared by the ADSTAR Task Force and submitted to this panel. This panel will be responsible for: a) reviewing RFPs for their completeness, concision, and legal soundness and clarity, and b) initial preparation of bidders lists.

4.3 SYSTEM DEVELOPMENT, ACQUISITION AND ACCEPTANCE TEST PHASE

This phase will involve the evaluation, selection, acquisition of hardware and development of software (if required). Software packages may include those defined for outside procurement as well as in-house developed packages necessary to produce the final system. The system will be documented by an Internal Reference Specification (IRS) which requires approval of Chief, DSG/CRS and Project Director, SAFE/OJCS. The acceptance testing activity will be the implementation of a test and quality assurance plan initiated as the beginning of the Design and Analysis Phase to insure that a consistent and structured test program is available to meet reliability, functional, and processing requirements.

4.4 SYSTEM IMPLEMENTATION PHASE

Following successful completion of the acceptance test, acceptance recommendation by the Tesk Force, and approval by the ADSTAR Steering Committee, the system will be phased into service. This phase will include: a) implementation of standard operating procedures developed during the preceding phases, b) conversion and parallel operation of the DSR system, and c) phasing out of operation the DSR system.

4.5 OPERATIONS AND MAINTENANCE PHASE

During this phase, the system will be operated as a special purpose automated document storage and retrieval system by CRS with all necessary interfaces established for existing and future systems. This will be the ongoing phase of the developmental effort and the task force responsibilities will have been completed.

SECTION V

CONSTRAINTS

The system development and design must address the following constraints:

5.1 COST

Funds programmed for ADSTAR currently total $1,500,000 in FY-1977 for the basic system with an additional $1,000,000 programmed in FY-1978 for acquisition of a non-SAFE remote terminal display capability. Other than funds for the operation and maintenance of the system, the total system cost through FY-1978, excluding Agency staff personnel salaries, shall not exceed $2,500,000.

5.2 SYSTEM LIFE SPAN

The system selected and implemented shall have a production life span of seven to ten years.

5.3 SAFE COMPATIBILITY

Particular emphasis shall be placed on the definition of requirements and system development and design compatible with the SAFE system. The ADSTAR system must be capable of satisfying reliability, availability, and response requirements of both SAFE and non-SAFE users.

5.4 OFF-THE-SHELF TECHNOLOGY

Hardware chosen to drive the ADSTAR system will be essentially "OFF-THE-SHELF" rather than the product of a special research and development effort to meet the Agency's needs. While this does not preclude the modification of certain standard components to render items more effective in the ADSTAR environment, it is not the intent to implement a system which relies to any significant extent on one-of-a-kind devices.

5.5 BACKUP OPERATION PROCEDURES

In the event of system failure or catastrophe, the system shall: a) be amenable to a manual operation to retrieve and present stored documents, and/or b) include a capability for storage and retrieval of documents in a different medium amenable to manual operations.

5.6 CONSERVATION OF UTILITIES

A criterion for the evaluation and selection of the system architecture and technology shall be the conservation of logistic resources and energy utilities.

SECTION VI

REPORTING AND REVIEW PROCEDURES

The Chief of the ADSTAR Task Team will report monthly in writing to the Chairman, ADSTAR Steering Committee, on progress, key problems confronted, and plans. He will also participate in the OJCS/CRS weekly meetings. Additional reporting responsibilities are identified in the Task Force Milestones Section VII (below).

ADSTAR MILESTONES

(TQ and FY77)

Consultant Contracts, signed	13 August 1976
Complete ADSTAR Requirements	16 August 1976
Identify OC, ODP, OL, CRS Interface Requirements and Initiate Coordination	30 August 1976
System Description and Specifications*	31 October 1976
External Reference Specification	15 November 1976
Draft RFP	30 November 1976
RFP Approved*	31 December 1976
Bidders List	31 December 1976
RFP's Released	January 1977
RFP Response	30 April 1977
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Evaluation and Ranking of Bids	30 June 1977
Bidder Selection*	31 July 1977

* Critical Milestones